TECHNICAL REVIEW DOCUMENT
For
RENEWAL / MODIFICATION TO OPERATING PERMIT 95OPPR074

Colorado Interstate Gas Company – Springfield Compressor Station
Prowers County
Source ID 0990003

Prepared by Jacqueline Joyce
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Revised January and February 2007

I. Purpose:

This document establishes the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewal and modification of the Operating Permit for the Springfield Compressor Station. The current Operating Permit for this facility was issued on February 1, 2003 and expires on February 1, 2008. The source submitted a renewal application on September 27, 2006 and as part of the renewal application, the source requested that the permit be modified to include the provisions for an emergency generator that is frequently at the facility (and may be at the facility for more than two years) but is currently permitted as a portable source.

This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the renewal/modification application submitted on September 27, 2006, comments on the draft permit and technical review document submitted on February 2, 2007, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

The facility is a natural gas compression facility as defined under Standard Industrial Classification 4922. Gas is compressed to specification for transmissions to sales pipelines using four (4) internal combustion engines to power compressor units. Other significant emission units at the facility consist of two (2) internal combustion engines to power electric generators and an additional internal combustion engine that is used as an emergency generator and may be at this facility or another CIG facility (Kit Carson Compressor Station).

Based on the information available to the Division and provided by the applicant, it appears that no modifications to these emission units has occurred since the issuance of the current operating permit.

The facility is located in Prowers County about 30 miles southwest of Lamar, CO in an area designated as attainment for all criteria pollutants. There are no federal Class I designated areas within 100 km of this facility. Kansas, an affected state, is within 50 miles of this facility.

Condensate Storage Tanks and Condensate Loading Equipment

Revisions were made to Colorado Regulation No. 3, regarding condensate storage tanks and condensate truck loading equipment and those revisions took effect on December 30, 2002. Previously, under Regulation No. 3, certain size condensate storage tanks and condensate truck loading equipment meeting a specified throughput limit were exempt from APEN reporting and permitting requirements and were considered insignificant activities for Title V operating permit purposes. With the revisions to Colorado Regulation No. 3, only condensate storage tanks and condensate truck loading equipment at exploration and production (E & P) sites, meeting specified throughput limits are APEN exempt and insignificant activities. There are no condensate storage tanks at this facility; therefore, this facility is not affected by these changes to Reg 3.

MACT Requirements

In the first renewal (issued February 1, 2003), the Division note that the facility was considered a major source for hazardous air pollutants (HAPS). The MACT requirements that potentially apply to this facility are as follows:

Case-by-Case MACT - 112(j) (40 CFR Part 63 Subpart B §§ 63.50 thru 63.56)

Under the federal Clean Air Act (the Act), EPA is charged with promulgating maximum achievable control technology (MACT) standards for major sources of hazardous air pollutants (HAPs) in various source categories by certain dates. Section 112(j) of the Act requires that permitting authorities develop a case-by-case MACT for any major sources of HAPs in source categories for which EPA failed to promulgate a MACT

standard by May 15, 2002. These provisions are commonly referred to as the "MACT hammer".

Owner or operators that could reasonably determine that they are a major source of HAPs which includes one or more stationary sources included in the source category or subcategory for which the EPA failed to promulgate a MACT standard by the section 112(j) deadline were required to submit a Part 1 application to revise the operating permit by May 15, 2002. The source did submit a Part 1 application to the Division prior to May 15, 2002, indicating that the facility was a major source for HAPS. Since the EPA has signed off on final rules for all of the source categories, which were not promulgated by the deadline, the case-by-case MACT provisions in 112(j) no longer apply.

NGTS Facilities MACT(40 CFR Part 63 Subpart HHH)

Since there are no glycol dehydrators, the facility is not subject to the requirements in 40 CFR Part 63 Subpart HHH.

Reciprocating Internal Combustion Engine (RICE) MACT (40 CFR Part 63 Subpart ZZZZ)

An affected source under the RICE MACT is any existing, new or reconstructed stationary RICE with a site-rating of more than 500 brake horsepower. Engines E001 through E004 are affected sources under the RICE MACT, while engines E005 and E006 are less than 500 hp and are not affected sources. Existing (commenced construction prior to December 19, 2002) 2-cycle lean burn RICE do not have to meet the requirements in Subparts A or ZZZZ, including the initial notification requirements as provided for in 40 CFR Part 63 Subpart ZZZZ § 63.6590(b)(3). The current Title V permit identifies existing engines E001 through E004 as 2-cycle rich burn engines. In their renewal application (received on September 27, 2006, the source indicated that engines E001 through E004 are actually 2-cycle lean burn engines and requested that the engines be indicated as such in the permit. The Division considers that the classification in the current Title V permit is truly an error. Neither the RICE MACT nor published information on emission factors (AP-42 and GRI HAPCalc) provide categories for 2-cycle rich burn engines; therefore, the Division considers that any 2-cycle engine is a lean burn engine. Therefore, the RICE MACT requirements do not apply to any of the engines at this facility and no additional periodic monitoring will be required.

Note that EPA has proposed revisions to the RICE MACT (published in the federal register on June 12, 2006) to include requirements for engines less than 500 hp. The two engines driving generators in the current Title V permit are 4-cycle rich burn engines and are less than 500 hp and the emergency generator that moves between Kit Carson and Springfield is a 4-cycle lean burn engine less than 500 hp. Under the proposed revisions to the RICE MACT, existing (commenced construction or reconstruction before June 12, 2006) 4-cycle rich burn engines less than 500 hp and existing 4-cycle lean burn engines are not subject to the requirements in Subparts A or

ZZZZ, including the initial notification requirements. Therefore at this time it appears that no RICE MACT requirements will apply to any of the engines at this facility.

Industrial, Commercial and Institutional Boilers and Process Heaters MACT (40 CFR Part 63 Subpart DDDDD)

There are boilers and process heaters included in the insignificant activity list in Appendix A of the permit. Although 40 CFR Part 63 Subpart DDDDD applies, existing (constructed before January 13, 2003) small gaseous fired units are not subject to any of the requirements in 40 CFR Part 63 Subparts A and DDDDD, including the initial notification requirements (§ 63.7506(c)(3)). The boilers and/or process heaters at this facility would fall under the existing small gaseous fired unit category and would therefore not be subject to any requirements.

Organic Liquid Distribution (Non-Gasoline) MACT (40 CFR Part 63 Subpart EEEE)

As provided for in 40 CFR Part 63 Subpart EEE § 63.2334(c)(2), organic liquid distribution operations do not include activities and equipment at NGTS facilities; therefore, the organic liquid distribution MACT requirements do not apply.

Compliance Assurance Monitoring (CAM) Requirements

CAM applies to any emission unit that is subject to an emission limitation, uses a control device to achieve compliance with that emission limitation and has potential pre-control emissions greater than major source levels. None of the significant emission units at this facility are equipped with control devices; therefore, the compliance assurance monitoring requirements do not apply to any emission units at this facility.

The summary of emissions that was presented in the Technical Review Document for the previous renewal permit has been modified to reflect the updated potential to emit (PTE) of both criteria and HAP pollutants due to the re-classification of engines E001 through E004 as 2-cycle lean burn engines. Emissions (in tons/yr) at the facility are as follows:

Emission Unit	Potential to Emit (tons/yr)						
	PM	PM_{10}	SO_2	NO_X	CO	VOC	HAPS
E001	2.31	2.31	0.03	151.34	18.43	5.73	See Table Page 12
E002	2.31	2.31	0.03	151.34	18.43	5.73	
E003	2.31	2.31	0.03	151.34	18.43	5.73	
E004	2.31	2.31	0.03	151.34	18.43	5.73	
E005	0.21	0.21	0.01	24.36	39.92	0.32	
E006	0.21	0.21	0.01	24.36	39.92	0.32	
E007	0.02	0.02	Negl.	12.7	1.2	0.3	
Total	9.66	9.66	0.13	666.79	154.75	23.85	20.76

In the above table, the criteria pollutant PTE for engines E001 through E006 is based on AP-42 emission factors, design rate and 8760 hours per year of operation and for E007 it is based on permitted emissions.

In the above table, the breakdown of HAP emissions by emission unit and individual HAP is provided on page 12 of this document. The HAP PTE is based on the Division's analysis. As indicated in the table footnotes on page 12, the HAP PTE was determined based on design rate, 8760 hrs/yr of operation or permitted hours of operation and the most conservative emission factor from AP-42 or HAPCalc 2.0.

III. Discussion of Modifications Made

Source Requested Modifications

The source's requested modifications identified in the modification request and the renewal application were addressed as follows:

Page following cover page

Although not specifically requested in the cover letter for the renewal application, the Division revised the permit to reflect the permit contact information identified in the Form 2000-100 that was submitted with the renewal application.

Section II.1 – Engines E001 through E004

In their renewal application, the source indicated that engines E001 through E004, are incorrectly identified as 2-stroke rich burn engines and that they should be designated as 2-stroke lean burn engines. In the cover letter for the renewal application, the source indicates that due to the excess air used for cylinder scavenging all 2-stroke engines operate lean of stoichiometric. Neither the RICE MACT or published information on emission factors (AP-42 and GRI HAPCalc) provide categories for 2-cycle rich burn

engines; therefore, the Division agrees that all 2-stroke engines operate as lean burn engines and will revise the permit to reflect that the engines are 2-stroke lean burn engines.

In conjunction with this change the Division will revise the emission factors in the permit to be appropriate for 2-stroke lean burn engines. The change in potential emissions associated with this modification is as follows:

	Potential to Emit (tons/yr)[1]		
	NO_X	CO	VOC
Engines E001 through E004 per this renewal	605.36	73.72	22.92
Engines E001 through E004 per current permit (February 1, 2003 renewal)	605.36	710.4	22.92
Change in Emissions	0	-636.68	0

[1]PTE based on AP-42 emission factors in lb/mmBtu, design heat input rate (10.9 mmBtu/hr) and 8760 hours per year of operation.

Note that the emission factors in the current permit for engines E001 through E004 are in units of lbs/mmSCF. The AP-42 emission factors that the source has indicated they will use to estimate emissions are in units of lbs/mmBtu. In order to be consistent with the current permit, the Division will convert the AP-42 emission factors into units of lbs/mmSCF (based on the heat value of 1020 Btu/scf as indicated in footnote b of AP-42) and include the converted emission factors in the permit. The emission factors to be included in the permit are as follows:

	AP-42 Emission Factors[1]	
Pollutant	lb/mmBtu	lb/mmSCF
NO_X	3.17	3,233.4
CO	0.386	393.7
VOC	0.120	122.4

[1] From Section 3.2 (dated July 2000), Table 3.2-1 (for NO_X at 90-105% load, for CO at 90-105% load)

<u>"New" Section II.2 – Emergency Generator</u>

E007/S007 – Caterpillar, Model No. G3408TA, 4-Cycle Lean Burn, Internal Combustion Engine, Rated at 369 hp and 2.95 mmBtu/hr, Serial No. 6NBO1120. This Engine is Natural Gas Fired and Drives a 270 kw Generator.

1. Applicable Requirements - This generator was initially permitted as a portable unit under Colorado Construction Permit No. 94EP430P (AIRS id 7770573), which was issued as an initial approval permit on January 5, 1995. This generator is normally moved between this facility and CIG's Kit Carson Compressor Station and has in the past been at one or both facilities for more than 24 months. Since the unit has been and could be in the future at one location for more than 24 months it is no longer considered a portable source and cannot be permitted as such. Therefore, the source

has requested that the appropriate applicable requirements shall be included in the Title V operating permits for both this facility and Kit Carson Compressor Station and will request that Colorado Construction Permit 94EF430P be cancelled upon issuance of both revised Title V permits that include the appropriate conditions for this generator. No construction permit will be issued for the generator at this facility but the appropriate requirements will be included in the permit as a combined construction/operating permit. The applicable requirements are as follows:

- Opacity of emissions shall not exceed 20% (Reg 1, Section II.A.1)

  Note that no condition is included for the Reg 1 30% opacity standard, which is applicable during certain operating activities. The specific activities under which the 30% opacity standard applies are: building a new fire, cleaning of fire boxes, soot blowing, startup, any process modification, or adjustment or occasional cleaning of control equipment. Based on engineering judgment the Division considers that building a new fire, cleaning of fire boxes and soot-blowing does not apply to the operation of internal combustion engines. In addition, this engine does not have a control device, so adjustment or occasional cleaning of control devices do not apply to this engine. Process modifications and startup may apply to engines, however, based on engineering judgment, the Division believes that such activities would be unlikely to occur for longer than six minutes. Therefore, the 30% opacity requirement has not been included in the operating permit.

- Natural Gas consumption shall not exceed 4.8 mmSCF/yr (as requested by APEN submitted September 27, 2006).

  Note that the fuel consumption included in the Title V permit is less than the limit in permit 94EP430P, which included a fuel consumption limit based on 8760 hrs/yr of operation but emission limits based on 1500 hrs/yr of operation. The fuel consumption limit included in the Title V permit is based on 1500 hrs/yr of operation.

- Emissions of air pollutants shall not exceed the following limitations (as requested by APEN submitted September 27, 2006):

  - NO_X 12.7 tons/yr
  - CO 1.2 tons/yr
  - VOC 0.3 tons/yr

  Note that requested NO_X emissions for the engine is the same as in permit 94EP430P but requested CO and VOC emissions are higher (due to revised AP-42 emission factors). Since requested emissions of CO and VOC are below the APEN de minimis levels, permitted emission limits for CO and VOC will not be included in the permit, although emissions of all criteria pollutants must be included on any APENS that are submitted.

Since this engine has been operating for several years as a portable source and the source submitted a self-certification indicating compliance with terms for the original construction permit (submitted on November 2, 1998), the Division will not include any specific requirement for certifying compliance with the applicable requirements for this engine. Note that since the unit is included in the Title V permit, semi-annual monitoring requirements and annual compliance certifications are required.

When this unit operated as a portable source, the Division included notification requirements for this engine whenever the engine was moved. Since this engine will only be at either this facility or Kit Carson and the appropriate provisions are being included in the Title V permits for both facilities, the Division considers that a notification requirement is not necessary. However, the permit will require that records be kept indicating where the engine is located and that the 12 month rolling totals for emissions and fuel consumption include use at either facility.

2. Emission Factors – Requested emissions for this engine are based on AP-42 emission factors for all pollutants except NO_X, which are based on manufacturer's data. The manufacturer's NO_X emission factor (19.4 g/hp-hr) was converted to units of lb/mmBtu using the engine heat rate of 7462 in the following equation:

$$\text{Lb/mmBtu} = \frac{\text{g/hp-hr} \times 10^6 \text{ Btu/mmBtu}}{\text{Heat rate (Btu/hp-hr)} \times 453.6 \text{ g/lb}}$$

The emission factors that were used to estimate emissions from this engine are summarized in the following table:

Pollutant	Emission Factor (lb/mmBtu)	Emission Factor (lb/mmSCF)[1]	Source
	9.99×10^{-3}	10.2	AP-42, Section 3.2, dated July 2000, Table 3.2-2, CO at < 90% load. PM and PM_{10} based on total (filterable plus condensable).
	9.99×10^{-3}	10.2	
	5.88×10^{-4}	0.60	
	0.557	568.1	
	0.118	1230.4	
	5.73 AP-42 = 3.72	5,844.6 AP-42 = 3,794.4	Manufacturer's, converted to lb/mmBtu based on engine heat rate of 7462 Btu/hp-hr.

[1]emission factors in lb/mmBtu converted to lb/mmSCF based on a gas heat value of 1020 Btu/SCF per AP-42, Table 3.2-2, footnote b.

Note that since estimated emissions from PM, PM_{10}, SO_2, CO and VOC at the requested fuel consumption limits are below the APEN de minimis levels, emission limits and emission factors for those pollutants will not be included in the permit.

3. Monitoring Requirements - The monitoring requirements for this engine are based on guidance developed by the Division for Internal Combustion Engines as shown on the attached Grid titled "Compliance/Scenario Summary - Gas Fired IC Engines" and are included in Section II.2 of the permit. As indicated by the grid, the source will be

required to monitor and record fuel consumption and calculate emissions monthly. Typically for permitted engines, the Division usually includes emission factors in units of lb/mmBtu in the permit and requires semi-annual sampling and analysis of natural gas to determine the Btu content. However, since this emergency generator is the only permitted engine at the facility and it operates infrequently (permitted levels at 1500 hrs/yr) the Division did not think it was appropriate to require gas sampling for one infrequently operated engine. The permit will include emission factors in units of lb/mmSCF.

4. Compliance Status – As mentioned previously, the source submitted a self-certification for this engine indicating compliance with the applicable requirements in permit 94EP430P when the unit was permitted as a portable engine. Since the unit has been and may be at either this facility or Kit Carson for more than 24 months and is therefore no longer considered a portable source, the source has requested that the engine be included in the Title V permits for both facilities and will cancel the portable construction permit upon issuance of both Title V permits.

Insignificant Activity List – Appendix A

In their renewal application, the source updated the insignificant activity list to include a 6500 gallon waste water tank.

Other Modifications

In addition to the source requested modifications, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments to the Springfield Compressor Station Renewal Operating Permit. These changes are as follows:

Page Following Cover Page

- It should be noted that the monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

General

- The Reg 3 citations were revised throughout the permit, as necessary, based on the recent revisions made to Reg 3.

Section I – General Activities and Summary

- In Condition 1.4 General Conditions 3.d and 3.g (Common Provisions, Affirmative Defenses for malfunctions and startups and shutdowns) was added as a State-only requirement.

- Revised the AIRS stack number in Condition 6.1 (summary of emissions) to indicate the grouping of engines E001 through E004 and E005 and E006.

- Added a column to the Table in Condition 6.1 for the startup date of the equipment.

Section II.1 – Engines E001 through E005

- In order to be consistent with the method used to convert the AP-42 emission factors for units E001 through E004 from units of lb/mmBtu to lb/mmSCF, the AP-42 emission factors for units E005 and E006 were converted to lb/mmSCF based on a gas heat content of 1020 Btu/SCF as indicated in footnote b of AP-42, Table 3.2-3. The emission factors that will be included in the permit for E005 and E006 are as follows:

Pollutant	Emission Factor (lb/mmBtu)	Emission Factor (lb/mmSCF)[1]	Source
NO_X	2.27	2,315.4	AP-42, Section 3.2, dated July 2000, Table 3.2-3, NO_X at < 90% load, CO at 90 – 105% load.
CO	3.72	3,794.4	
VOC	2.96×10^{-2}	30.2	

[1]emission factors in lb/mmBtu converted to lb/mmSCF based on a gas heat value of 1020 Btu/SCF per AP-42, Table 3.2-3, footnote b.

- Based on EPA's response to a petition on another Title V operating permit, minor language changes were made to various permit conditions (both in the table and the text) to clarify that only natural gas is used as fuel.

- Removed the note in Condition 1.3 that states that natural gas is the only fuel used in the engines.

Section III – Permit Shield

- The citation in the permit shield was corrected. The reference to Part C, Section XIII was changed to Part C, Section XIII.B and Reg 3, Part C, Section V.C.1.b and C.R.S. § 25-7-111(2)(I) were removed since they don't address the permit shield.

Section IV – General Conditions

- Revisions were made to the Common Provisions Regulation (general condition 3), effective September 30, 2002. The appropriate revisions were made to the

language in the permit. In addition, the upset revisions in the Common Provisions Regulation (general condition 3.d) were revised December 15, 2006 (effective March 7, 2007) and the revisions were included in the permit. Note that these provisions are state-only enforceable until approved by EPA into Colorado's state implementation plan (SIP).

- Replaced the reference to "upset" in Condition 5 (emergency provisions) and 21 (prompt deviation reporting) with "malfunction".

- General Condition No. 21 (prompt deviation reporting) was revised to include the definition of prompt in 40 CFR Part 71.

- Replaced the phrase "enhanced monitoring" with "compliance assurance monitoring" in General Condition No. 22.d.

Appendices

- Replaced Appendices B and C with latest version.

- Changed the mailing address for EPA in Appendix D.

HAPS per Division Analysis

	HAP Emissions (tons/yr)									
Unit	acetaldehyde	acrolein	benezene	toluene	2,2,4-trimethlypentane	xylene	formaldehyde	n-hexane	methanol	**total**
E001	0.37	0.37	0.58	0.20	0.04	0.07	3.17		0.12	4.92
E002	0.37	0.37	0.58	0.20	0.04	0.07	3.17		0.12	4.92
E003	0.37	0.37	0.58	0.20	0.04	0.07	3.17		0.12	4.92
E004	0.37	0.37	0.58	0.20	0.04	0.07	3.17		0.12	4.92
E005	0.03	0.03	0.06	0.02		0.00	0.26		0.03	0.43
E006	0.03	0.03	0.06	0.02		0.00	0.26		0.03	0.43
E007*	0.02	0.01	0.00	0.02		0.00	0.15	0.00	0.01	0.21
Total	1.56	1.55	2.44	0.86	0.16	0.29	13.35	0.00	0.55	20.76

Engine emissions are based on most conservative emission factor (from AP-42 and HAPCalc 2.0, for 4-cycle rich burn engines and/or 2-cycle lean/clean burn) for each pollutant.
*emissions based on 1500 hrs/yr of operation.